

IN THE CLAIMS

Please amend the claims as follows:

1 (Currently Amended). ~~An image evaluation method for evaluating a dot in an image produced by an imaging apparatus that generates a two-dimensional image on a support medium, said image being formed by a plurality of dots having a predetermined dimension arranged in a main scanning direction and a sub scanning direction at predetermined pitches of at least 2.5 times the predetermined dimension of the dots, the method comprising the step of:~~

~~evaluating a dot position deviation in the sub scanning direction by measuring a dot position of each dot in the image~~ An image evaluation method implemented in an image evaluation apparatus, comprising:

evaluating a dot of an image that is reproduced on a support medium by an imaging apparatus and formed by a plurality of dots having a predetermined dimension arranged in a main scanning direction and a sub scanning direction, said image evaluation apparatus producing image signals at a resolution at least twice as high as a dot resolution of the image;

measuring a dot position of each dot in the image;

obtaining image signals of a portion of the image reproduced by the imaging apparatus, said portion of the image containing a dot line of at least three dots arranged in the main scanning direction;

setting a dot detection start position within the portion of the image, detecting an image signal value of said dot detection start position, and accumulating the detected image signal value of the dot detection start position;

successively determining a next dot detection position within the portion of the image based on the dot detection start position and the predetermined pitch in the main scanning

direction, detecting the image signal value of the next dot detection position, and accumulating the detected image signal value of the next dot detection position;  
calculating an accumulation value of the detected image signal values of the dot detection start position and the next dot detection position;  
successively shifting the dot detection start position within the portion of the image and repeating the steps of detecting and accumulating the image signal value of the dot detection start position, determining the next dot detection position, detecting and accumulating the image signal value of the next dot detection position, and calculating the accumulation value to obtain a plurality of accumulation values;  
comparing the plurality of accumulation values and detecting a minimum accumulation value; and  
determining the dot positions of the dot line contained in the portion of the image based on the dot detection positions of which the accumulation value corresponds to the minimum accumulation value.

2. (Original). The image evaluation method as claimed in claim 1, further including evaluating a dot size variation in the image by measuring a dot size of each dot in the image.

3. (Original). The image evaluation method as claimed in claim 1, wherein the image produced by the imaging apparatus is formed by a plurality of dots in a diagonal line such that adjacent dots of the diagonal line are offset from each other by at least one dot in the sub scanning direction.

4. (Currently Amended). An image evaluation apparatus, comprising:

~~an image input unit that captures an image reproduced by an imaging apparatus as a two-dimensional image signal at a resolution that is at least twice as high as a dot resolution of the image, said image signal representing an image formed by a plurality of dots having a predetermined dimension arranged in a main scanning direction and a sub scanning direction at predetermined pitches of at least 2.5 times the predetermined dimension of the dots;~~

~~an image storage unit that stores the image signal acquired by the image input apparatus; and~~

~~an image signal computation unit that obtains the image signal from the image storage unit and performs a computation for evaluating the image based on the image signal.~~

evaluating unit configured to evaluate a dot of an image that is reproduced on a support medium by an imaging apparatus and formed by a plurality of dots having a predetermined dimension arranged in a main scanning direction and a sub scanning direction;

a producing unit configured to produce image signals at a resolution at least twice as high as a dot resolution of the image;

a measuring unit configured to measure a dot position of each dot in the image;

an obtaining unit configured to obtain image signals of a portion of the image reproduced by the imaging apparatus, said portion of the image containing a dot line of at least three dots arranged in the main scanning direction;

a setting unit configured to set a dot detection start position within the portion of the image, to detect an image signal value of said dot detection start position, and to accumulate the detected image signal value of the dot detection start position;

a determining unit configured to successively determine a next dot detection position within the portion of the image based on the dot detection start position and the predetermined pitch in the main scanning direction, to detect the image signal value of the

next dot detection position, and to accumulate the detected image signal value of the next dot detection position;

a calculating unit configured to calculate an accumulation value of the detected image signal values of the dot detection start position and the next dot detection position;

a shifting unit configured to successively shift the dot detection start position within the portion of the image, to cause said determining unit to repeat the detection and accumulation of the image signal value of the dot detection start position, to determine the next dot detection position, to detect and accumulate the image signal value of the next dot detection position, and to calculate the accumulation value to obtain a plurality of accumulation values;

a comparing unit configured to compare the plurality of accumulation values and to detect a minimum accumulation value; and

the determining unit is configured to determine the dot positions of the dot line contained in the portion of the image based on the dot detection positions of which the accumulation value corresponds to the minimum accumulation value

5 (Currently Amended). An image evaluation program implemented in an image evaluation apparatus to evaluate a dot of an image that is reproduced on a support medium by means of an imaging apparatus and formed by a plurality of dots having a predetermined dimension arranged in a main scanning direction and a sub scanning direction, said image evaluation apparatus producing image signals at a resolution at least twice as high as a dot resolution of the image, and said image evaluation program being arranged to measure a dot position of each dot in the image, the image evaluation program comprising instructions to execute the steps of:

obtaining image signals of a portion of the image reproduced by the imaging apparatus, said portion of the image containing a dot line of at least three dots arranged in the main scanning direction ~~at a predetermined pitch of at least 2.5 times the predetermined dimension of the dots;~~

setting a dot detection start position within the portion of the image, detecting an image signal value of said dot detection start position, and accumulating the detected image signal value of the dot detection start position;

successively determining a next dot detection position within the portion of the image based on the dot detection start position and the predetermined pitch in the main scanning direction, detecting the image signal value of the next dot detection position, and accumulating the detected image signal value of the next dot detection position;

calculating an accumulation value of the detected image signal values of the dot detection start position and the next dot detection position;

successively shifting the dot detection start position within the portion of the image and repeating the steps of detecting and accumulating the image signal value of the dot detection start position, determining the next dot detection position, detecting and accumulating the image signal value of the next dot detection position, and calculating the accumulation value to obtain a plurality of accumulation values;

comparing the plurality of accumulation values and detecting a minimum accumulation value; and

determining the dot positions of the dot line contained in the portion of the image based on the dot detection positions of which the accumulation value corresponds to the minimum accumulation value.

6. (Original). The image evaluation program as claimed in claim 5, further comprising an instruction for:

repeating the steps of obtaining image signals of a next portion of the image that is adjacent to the portion that has just been measured with respect to the sub scanning direction, and determining the dot positions of the dot line contained in the portion of the image to obtain the dot position of each dot in the image.

7. (Original). The image evaluation program as claimed in claim 5, wherein:

the predetermined pitch in the main scanning direction, used in the dot position detection of the dot line, is varied within a predetermined range, and the dot positions of the dot line contained in the portion of the image are determined based on the dot detection positions of which the accumulation value corresponds to the minimum accumulation value from among the accumulation values obtained using the various pitches.

8. (Original). The image evaluation program as claimed in claim 7, wherein:

the dot pitch that has been used to determine the dot detection positions of which the accumulation value corresponds to the minimum accumulation value is used in a subsequent dot position detection of the dot line in the portion of the image next in line with respect to the sub scanning direction.

9. (Original). The image evaluation program as claimed in claim 5, wherein:

a slope of a dot detection base line extending in the main scanning direction on which the dot detection positions are aligned at the predetermined pitch in the main scanning direction, used in the dot position detection of the dot line, is varied within a predetermined

range while the predetermined pitch in the main scanning direction is maintained at the same pitch, and the dot positions of the dot line are determined based on the dot detection positions of which the accumulation value corresponds to the minimum accumulation value from among the accumulation values obtained using the dot detection base lines with the various slopes.

10. (Original). The image evaluation program as claimed in claim 5, further comprising instructions to execute the steps of:

obtaining image signals of a region of the image adequately containing a dot being measured in the image based on the detected dot position of said dot;

calculating an average value of the image signals corresponding to surrounding areas of the dot being measured that is within the region of the image; and

determining a dot size of the dot being measured by successively calculating and accumulating a difference between an image signal value within the region of the image and the average value of the surrounding areas of the dot being measured for each of the image signal values contained in the region of the image.

11. (Original). The image evaluation program as claimed in claim 5, further comprising the steps of:

obtaining image signals of the support medium in a state prior to having the dots of the image reproduced by the imaging apparatus and storing the image signals of the support medium;

obtaining image signals of the image with the dots reproduced on the support medium by the imaging apparatus;

calculating a difference between the image signals of the reproduced image and the image signals of the support medium to obtain a processed image; and

determining a dot size of a dot being measured in the image by accumulating image signals of a region of the processed image adequately containing the dot being measured, said region of the processed image being obtained based on the detected dot position of the dot being measured.

12. (Currently Amended). A recording medium, comprising: A computer readable storage medium encoded with instructions, which when executed by a computer causes the computer to perform an a memory unit that is arranged to store an image evaluation program method implemented in an image evaluation apparatus to evaluate a dot of an image that is reproduced on a support medium by means of an imaging apparatus and formed by a plurality of dots having a predetermined dimension arranged in a main scanning direction and a sub scanning direction, said image evaluation apparatus producing image signals at a resolution that is at least twice as high as a dot resolution of the image, and said image evaluation program being arranged to measure a dot position of each dot in the image, the recording medium method comprising instructions to execute the steps of:

obtaining image signals of a portion of the image produced by the imaging apparatus, said portion of the image containing a dot line of at least three dots arranged in the main scanning direction ~~at a predetermined pitch of at least 2.5 times the predetermined dimension of the dots;~~

setting a dot detection start position within the portion of the image, detecting an image signal value of said dot detection start position, an accumulating the detected image signal value of the dot detection start position;

successively determining a next dot detection position within the portion of the image based on the dot detection start position and the predetermined pitch in the main scanning direction, detecting the image signal value of the next dot detection position, and accumulating the detected image signal value of the next dot detection position;

calculating an accumulation value of the detected image signal values of the dot detection start position and the next dot detection position;

successively shifting the dot detection start position within the portion of the image and repeating the steps of detecting and accumulating the image signal value of the dot detection start position, determining the next dot detection position, detecting and accumulating the image signal value of the next dot detection position, and calculating the accumulation value to obtain a plurality of accumulation values;

comparing the plurality of accumulation values and detecting a minimum accumulation value; and

determining the dot positions of the dot line contained in the portion of the image based on the dot detection positions of which the accumulation value corresponds to the minimum accumulation value.